



**UNITED STATES DEPARTMENT OF COMMERCE**  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/323,692 06/02/99 YAMAZAKI

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NIXON PEARBODY, LLP  
8180 GREENSBORO DRIVE  
SUITE 800  
MOLEAN VA 22102

EXAMINER

LEELE

ART UNIT

PAPER NUMBER

2815

DATE MAILED:

02/28/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

**Office Action Summary**

Application No.

09/323,692

Applicant(s)

YAMAZAKI ET AL.

Examiner

Eugene Lee

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 June 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-76 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-76 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 1999 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 07/673,458.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. Figure 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "39" has been used to designate both contact holes and organic resin film. Correction is required.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "37" has been used to designate both lead electrode and interlayer film. Correction is required.
4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first and second substrate along with the other limitations in claim 1 (for example) must be shown or the feature(s) canceled from the claim(s).

### ***Claim Objections***

5. Claim 4, 71 and all related claims are objected to because of the following informalities: the word "form" should be "from." Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 thru 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumiyoshi et al. '134A in view of Ohmura '937. Sumiyoshi discloses (see figures 1 and 2) an electro-optical device comprising a substrate 101, second substrate 201; a thin film transistor comprising a polysilicon semiconductor layer (source, drain and channel regions); gate insulation film 105, insulation film 107, contacts (conductive film) 108, 109, insulation flattening film (organic resin film) 110, and display electrode (pixel electrode) 111. However, Sumiyoshi does not disclose the polysilicon semiconductor layer exhibiting a peak displaced to the lower frequency direction. Ohmura, on the other hand, discloses (see, for example, column 4, lines 38-47) a crystal silicon layer displaced to the lower frequency direction ( $518\text{ cm}^{-1}$ ). Ohmura teaches that this crystal layer will provide enhanced electron mobility (see, for example, column 2, lines 28-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the Ohmura's crystal silicon layer into Sumiyoshi's invention so that one can improve the electron mobility of the device.

- a. Regarding the organic resin film, even though Sumiyoshi does explicitly state the material of the insulation flattening film, it was well known in the art at the time of invention that organic resin films, as well as other insulation materials, were routinely used to flatten out the lower surfaces of a device. For a specific example, see, *Prior Art*, cited below.
- b. Regarding claim 45 and all related claims (claims involving CMOS devices), it was well known in the art at the time of invention to group an NMOS and PMOS

together on the same wafer in order to form a complementary MOS (CMOS) device. See *Prior Art* below.

- c. Regarding claims 2, 11, 21, 34, 47, and 69 (i.e. pixel electrode is a transparent conductive film), see *Prior Art* below.
- d. Regarding claims 3, 12, 22, 35, 48, and 70 (i.e. inorganic material comprises silicon oxide), see *Prior Art* below.
- e. Regarding claims 5, 14, 24, 25, 37, 38, 50, 51, and 72 Sumiyoshi does not disclose the thickness of the interlayer insulating film or gate insulating film; however, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use a thickness between .2 to .6 um or 500A to 2000 A respectively since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 10 5 USPQ 233.
- f. Regarding claims 6, 7, 15, 16, 26, 27, 39, 40, 52, 53, 73, and 74, Sumiyoshi does not disclose the actual pixel array size; however, it would have been obvious to one having ordinary skill in the art at the time of invention was made to make an array size fitting to the specifications of a designer, since it has been held that mere duplication of the essential working parts (in a repeating array structure) of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8. Also, see applicant's admitted prior art on the bottom of page 1 where some example matrix sizes are recited.

- g. Regarding claims 28, 29, 41, 42, 54, and 55, see, for example, column 4, lines 60-65 and column 6, lines 51-61 of Ohmura.
- h. Regarding claims 63-67, 76, even though Ohmura does not disclose the boron concentration in a range of  $1 \times 10^{15}$ - $1 \times 10^{18} \text{ cm}^{-3}$ , it would have been obvious to one of ordinary skill in the art at the time of invention was made to implant boron within these concentration ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 10 5 USPQ 233.

***Prior Art***

8. The prior art of made of record and not relied upon is considered pertinent to applicant's disclosure. See, for example, column 4, lines 14-29 of Wakai ' 356 where the inventor states the insulation materials (such as polyimide) that may be used to flatten underlying surfaces. Also, Ohmura shows an example of a CMOS device implementing PMOS and NMOS transistors.

**INFORMATION ON HOW TO CONTACT THE USPTO**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 703-305-5695. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 703-308-1690. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Eugene Lee  
February 19, 2001

A handwritten signature in black ink, appearing to read 'Eddie C. Lee', with a stylized, flowing script.

**EDDIE C. LEE**  
**PRIMARY EXAMINER**